

Appl. No. 10/001,314
Amdt. dated October 16, 2003
Reply to Final Office Action of June 16, 2003

REMARKS/ARGUMENTS

The Office Action notes that Claims 1-15 are pending in the application. By this Amendment, Claims 1 and 6 have been amended. Support for the amendments to Claims 1, 6, 7, 11, 12, 13 and 14 can be found throughout the originally filed application papers. Therefore, no new matter has been added. Claims 1-15 remain pending.

Claims 1-4 and Claims 7-10 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Inoue et al. (U.S. Pat. No. 6,214,695; "Inoue").

Claim 1, as amended, recites a method for forming an isolation layer of a semi-conductor device. The method comprises:

- providing a silicon substrate in which an active region and a field region are defined;
- forming a trench in the field region;
- forming an insulating layer on the silicon substrate, thereby filling the trench with the insulating layer;
- forming a capping layer on a resultant entire structure including the insulating layers;
- etching the capping layer to expose an upper portion of the insulating layer within the active region;
- removing the upper portion of the insulating layer; and
- removing a residual portion of the capping layer.

Claim 1 is patentably distinct from all three embodiments disclosed in Inoue. For example, in the first embodiment of Inoue, polysilicon film 6, which the Examiner equates to the capping layer of the claims, is removed by a CMP process (column 6, lines 29-32). In the second embodiment of Inoue, silicon nitride film 7, which the Examiner equates to the capping

Appl. No. 10/001,314
Amdt. dated October 16, 2003
Reply to Final Office Action of June 16, 2003

layer of the claims, is also removed through a CMP process (column 7, lines 42-44). Finally, in the third embodiment, silicon nitride film 7, which the Examiner equates to the capping layer is removed by a CMP process (column 9, lines 41-43). In contrast, the method of claim 1 recites "etching the capping layer to expose an upper proportion of the insulating layer within the active region."

The Office Action acknowledges that Inoue does not disclose this feature when presenting its § 103(a) rejection to dependent claims 5-6 and 11-15 (see § 4 of the Office Action). The Office Action asserts, however, that Huang (U.S. Pat. No. 6,191,000; "Huang") discloses this feature and it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Inoue to use a masking step (and by implication an etching step) instead of a CMP step to expose the active regions. The Applicants respectfully disagree. A close reading of Inoue demonstrates that Inoue actually teaches away from such a combination. The entire purpose of the invention disclosed in Inoue is to provide an improved CMP method. Inoue explicitly states that the CMP methods disclosed therein are superior to etch back methods (column 8, lines 1-8). Therefore, one of ordinary skill in the art would not be motivated to modify Inoue to include any etching methods disclosed in Huang because the disclosure of Inoue directs one of skill in the art away from such teachings. Therefore, the Applicants respectfully submit that Claim 1 is allowable over Inoue and over any proposed combination of Inoue and Huang.

Appl. No. 10/001,314
Amdt. dated October 16, 2003
Reply to Final Office Action of June 16, 2003

The Applicants respectfully submit that Independent Claims 7 and 14 are allowable for the same reasons as given with respect to Claim 1. The remaining claims are dependent, and therefore are also allowable for the same reasons as given with respect to Claim 1.

In view of the aforesaid, the Applicants respectfully submit that all pending claims are in a condition for allowance. Favorable reconsideration is respectfully requested.

Respectfully submitted,

By: 
Douglas S. Kupert
Reg. No. 44,434

Date: 10/16/03
WILDMAN, HARROLD, ALLEN & DIXON LLP
225 West Wacker Drive
Chicago, IL 60606
Ph. 312/201-2000
Fax 312/201-2555

CERTIFICATE OF EXPRESS MAIL
"Express Mail" mailing label number: ER 02250149945
Date of Deposit: 10/16/03
I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" on the date indicated above and is addressed to the Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450. Christine A. Smola